

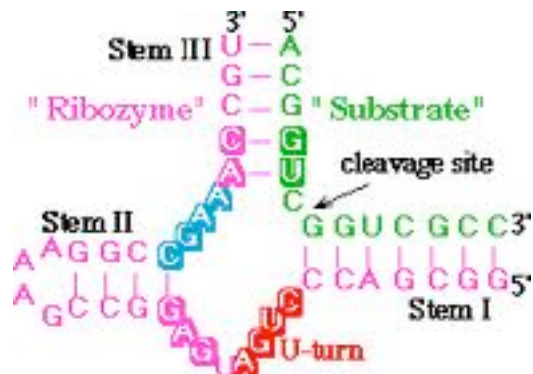
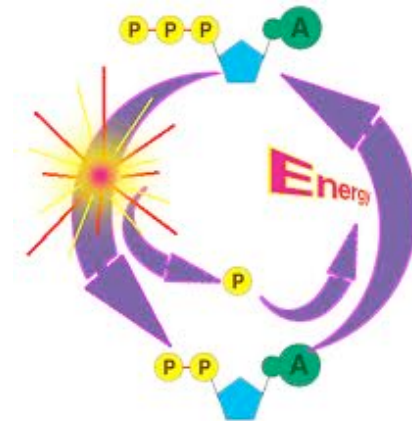
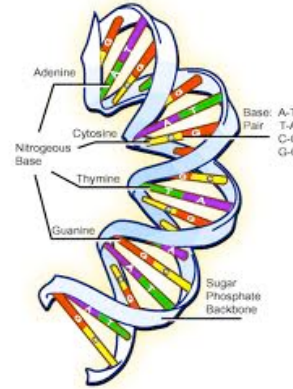
Gli acidi nucleici.

Funzioni:

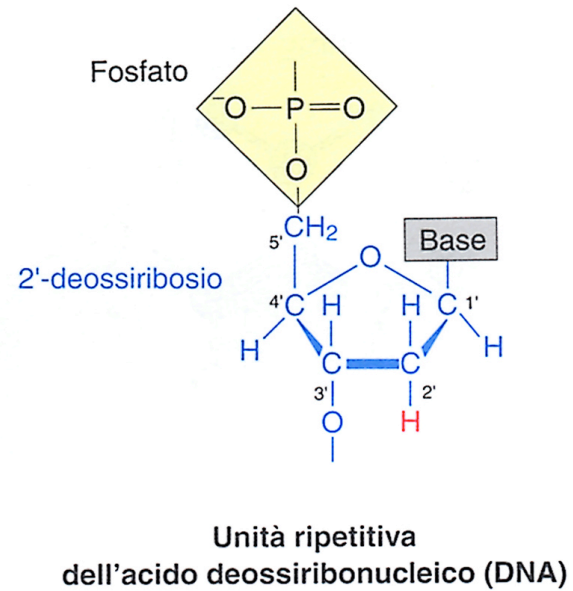
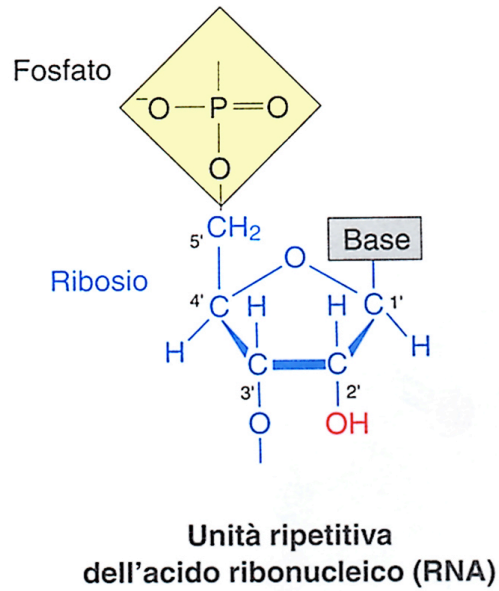
1. Informazione genetica.

2. Trasporto di energia.

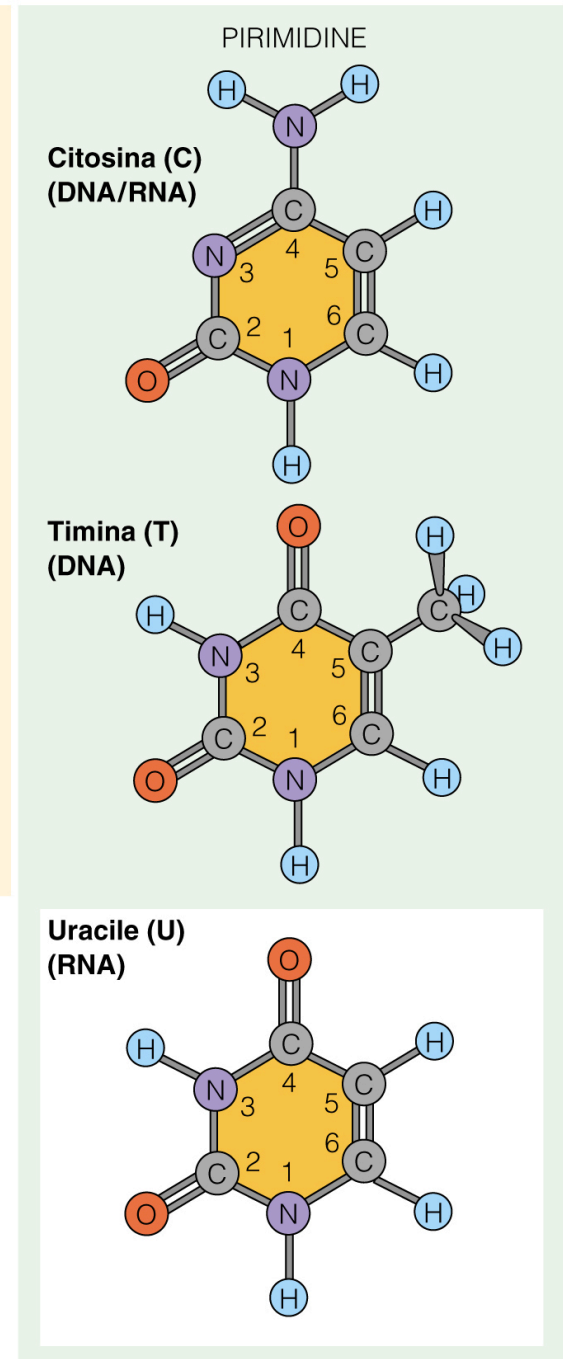
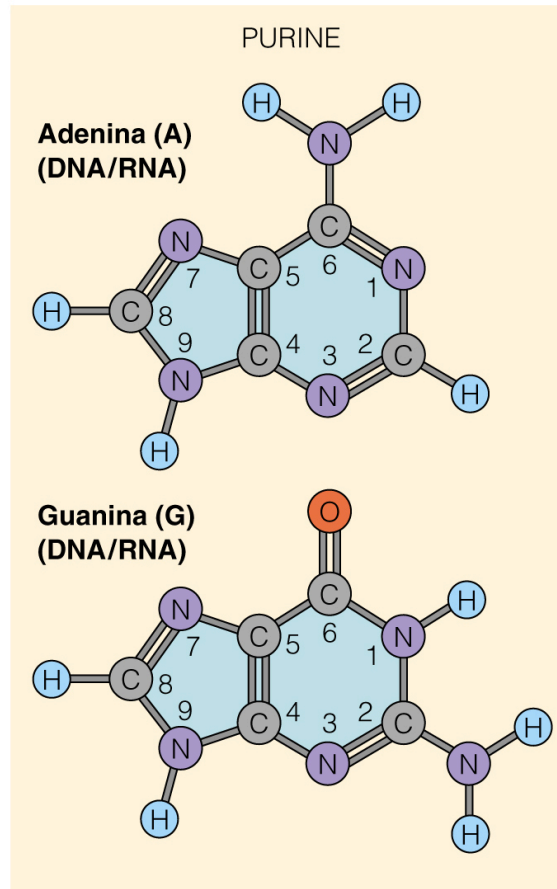
3. Attività enzimatica (ribozimi).



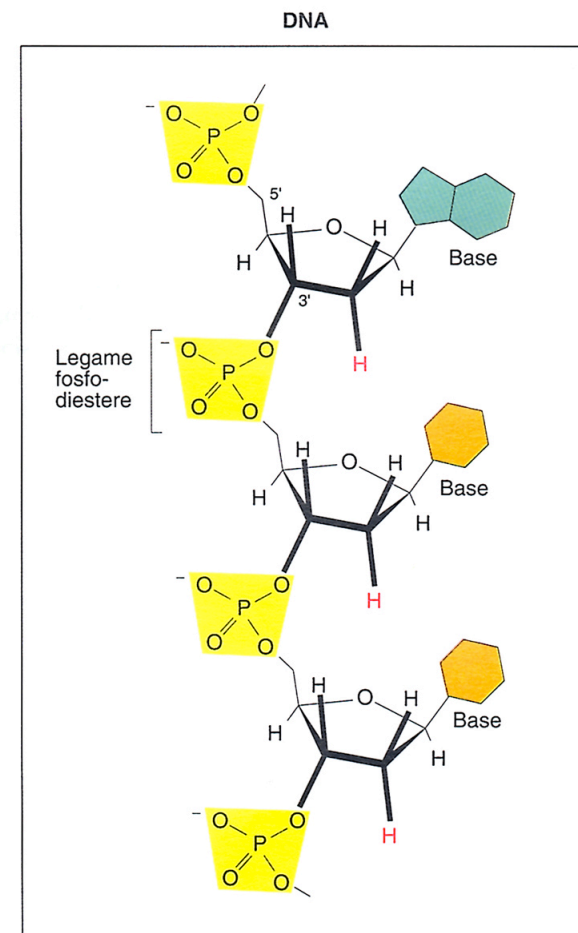
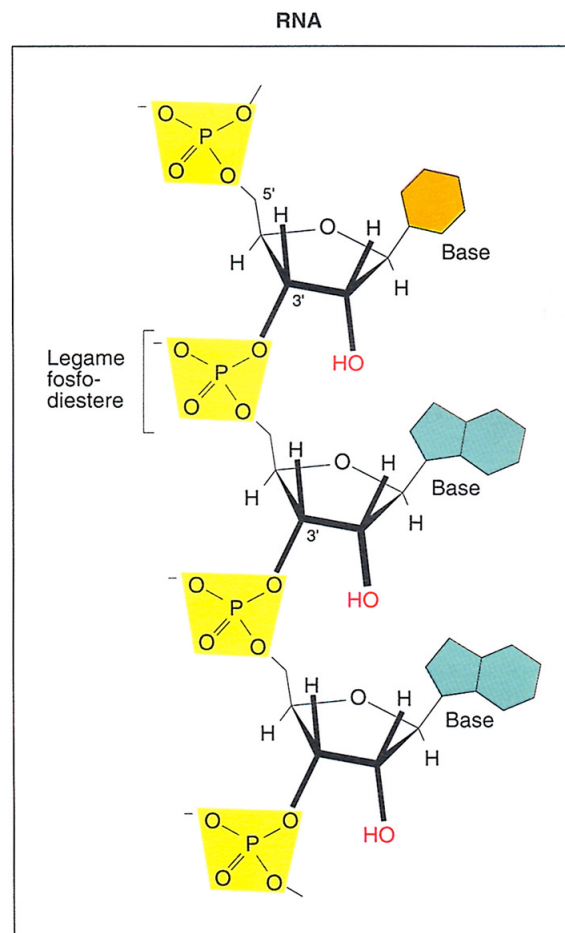
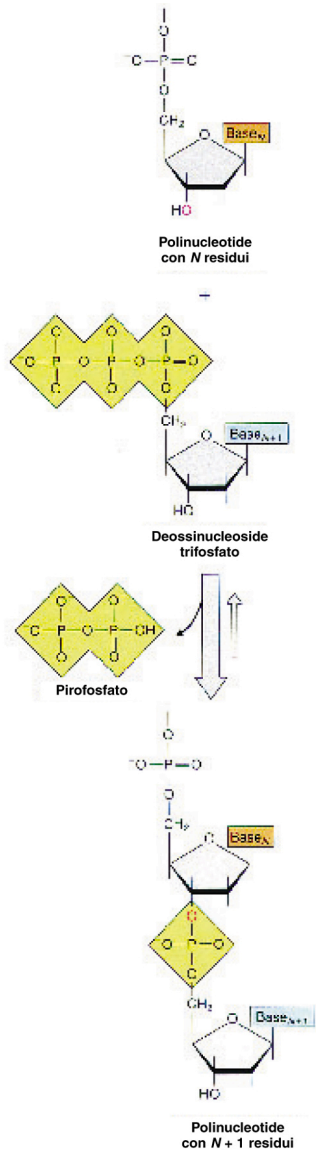
Gli acidi nucleici, elementi costitutivi.



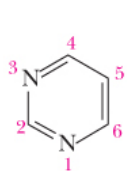
Le basi azotate aromatiche



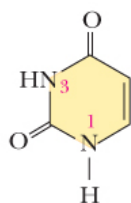
La polimerizzazione avviene mediante formazione di ponti fosfodiesteri



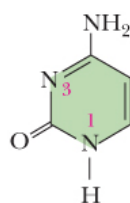
Le basi azotate aromatiche che degli acidi nucleici.



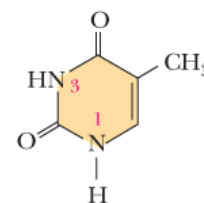
Pirimidina



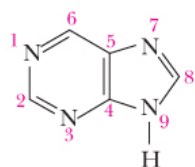
Uracile (U)



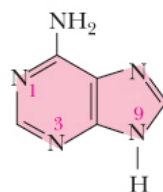
Citosina (C)



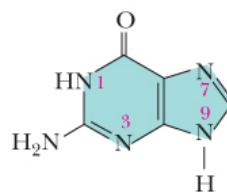
Timina (T)



Purina



Adenina (A)



Guanina (G)

Figura 20.1

Nomi e abbreviazioni a una lettera usate per le basi azotate eterocicliche aromatiche più comuni presenti nel DNA e nell'RNA. Gli atomi dei cicli che costituiscono le basi sono numerati secondo gli stessi criteri usati per i composti capistipite, la pirimidina e la purina.

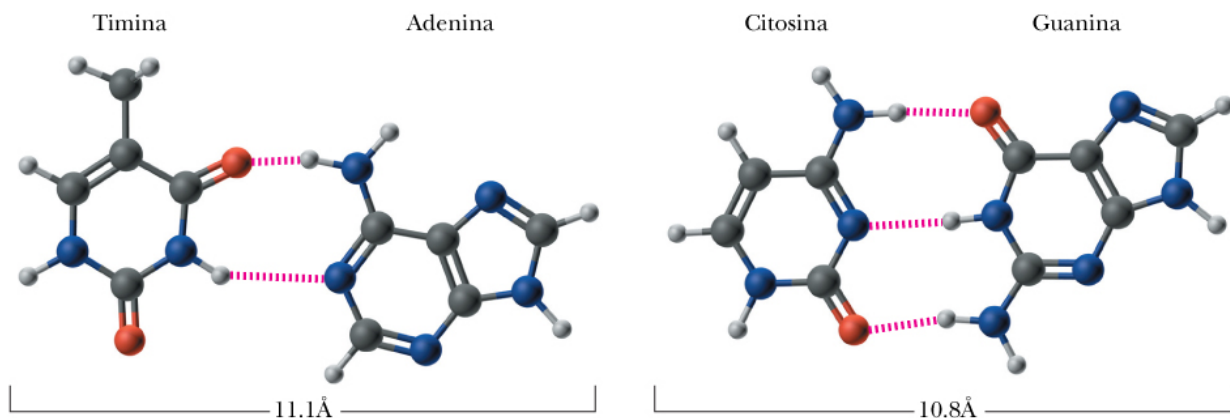
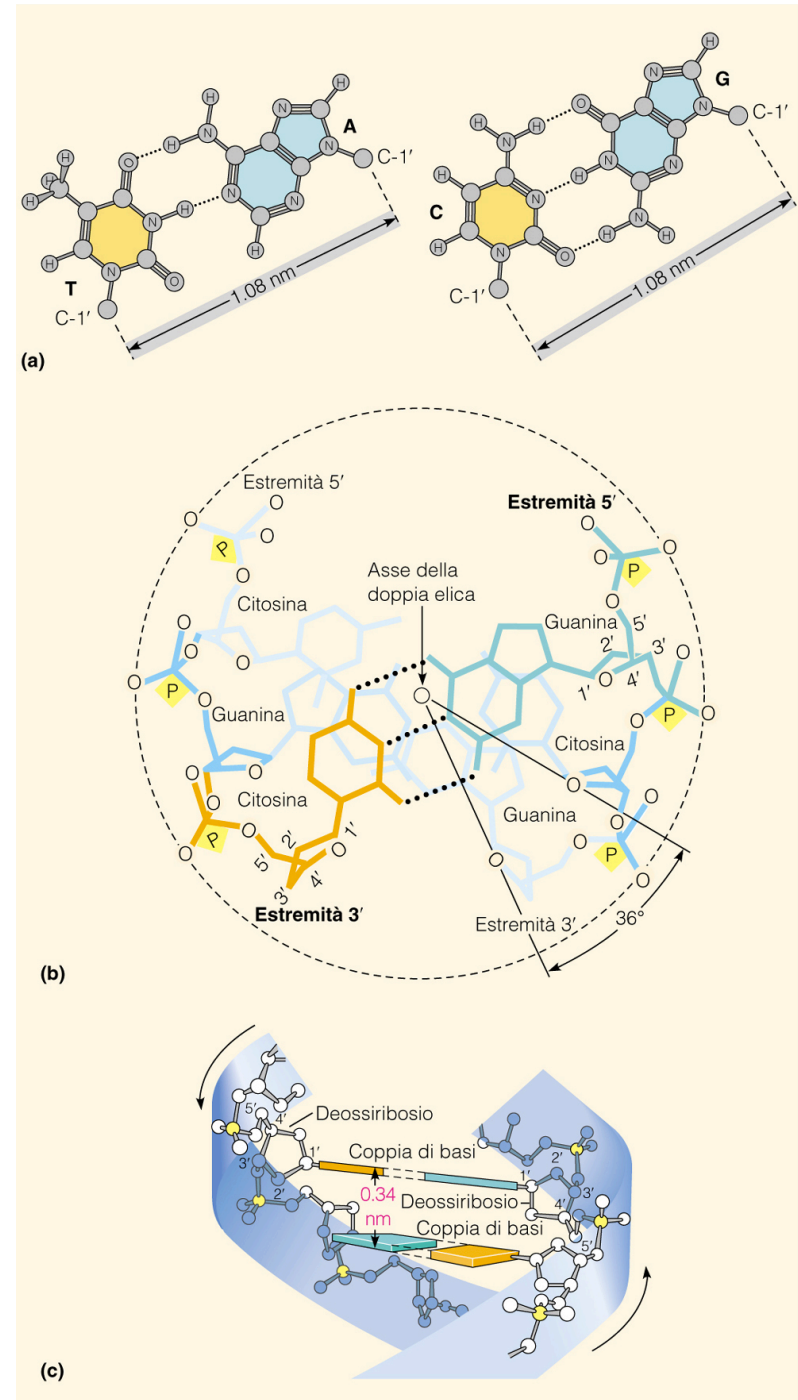


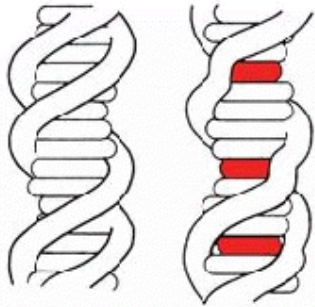
Figura 20.7

L'accoppiamento di basi tra adenina e timina (A-T) e tra guanina e citosina (G-C). La coppia di basi A-T è tenuta insieme da due legami idrogeno, mentre la coppia G-C da tre.

L'accoppiamento specifico fra le basi azotate e la complementarità di forma tra purine e pirimidine permettono al DNA di replicarsi.

La formazione della doppia elica avviene per accoppiamento tra basi complementari: legame idrogeno e “stacking” tra basi aromatiche.

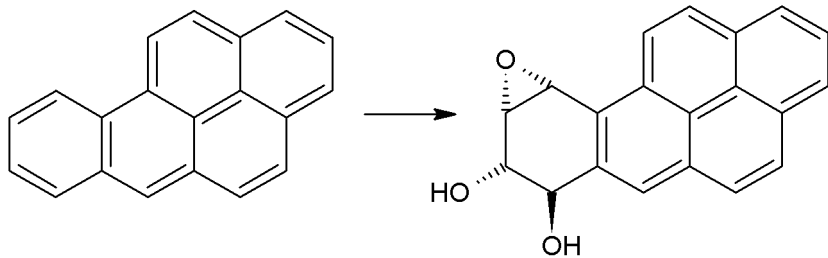




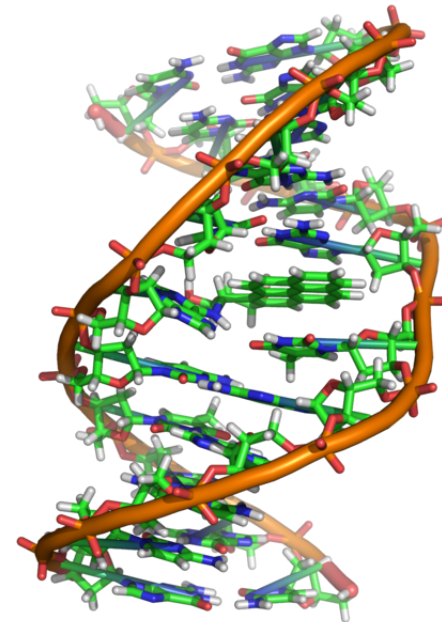
Carcinogenicità del benzo(a)pirene

Properly speaking, benzo[a]pyrene is a procarcinogen, meaning that the mechanism of carcinogenesis of benzo[a]pyrene depends on its enzymatic metabolism to the ultimate mutagen, benzo[a]pyrene diol epoxide.

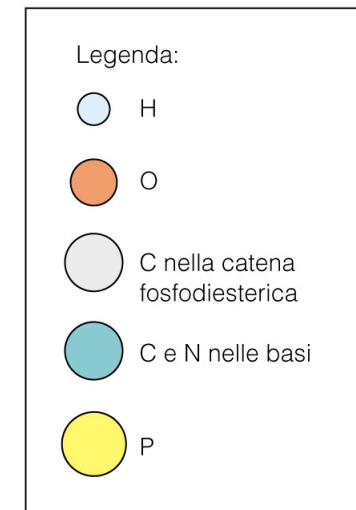
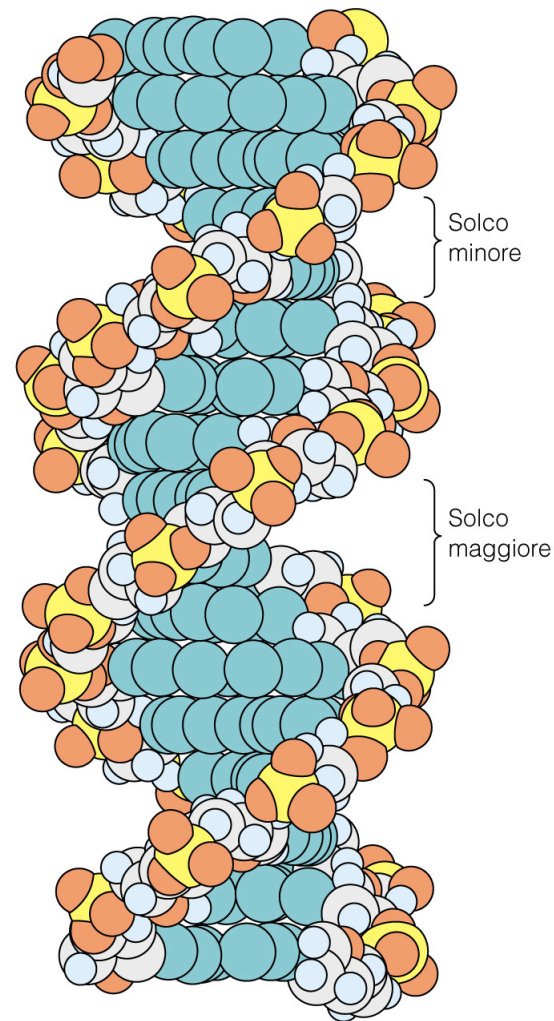
This molecule intercalates in DNA covalently bonding to the nucleotide guanine, this binding distorts the DNA, inducing mutations by perturbing the double-helical structure. This disrupts the normal process of copying DNA and induces mutations, which explains the occurrence of cancer.

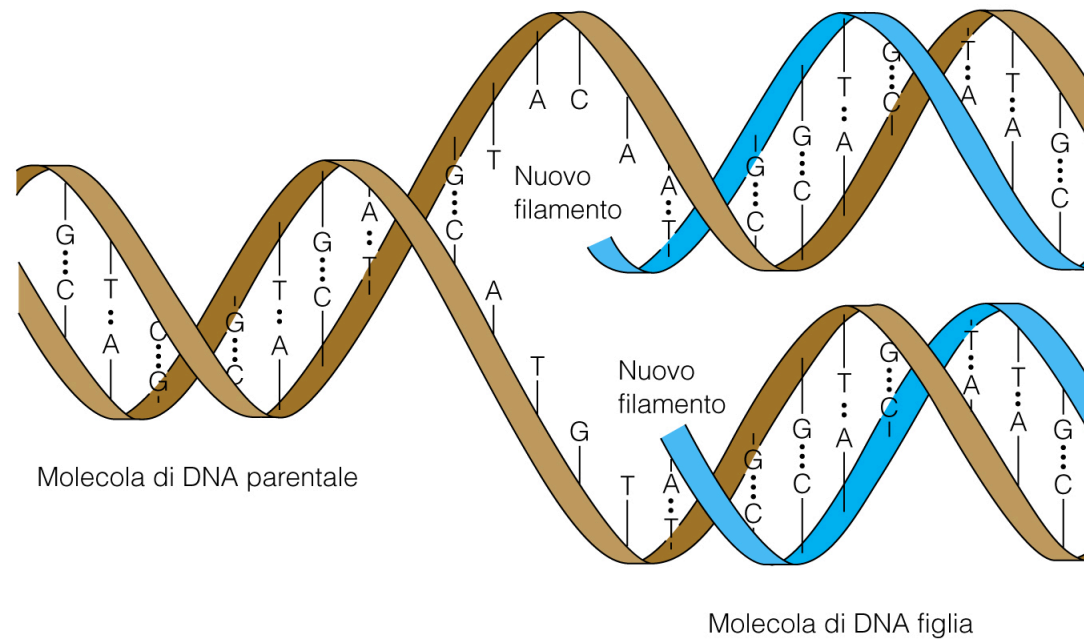


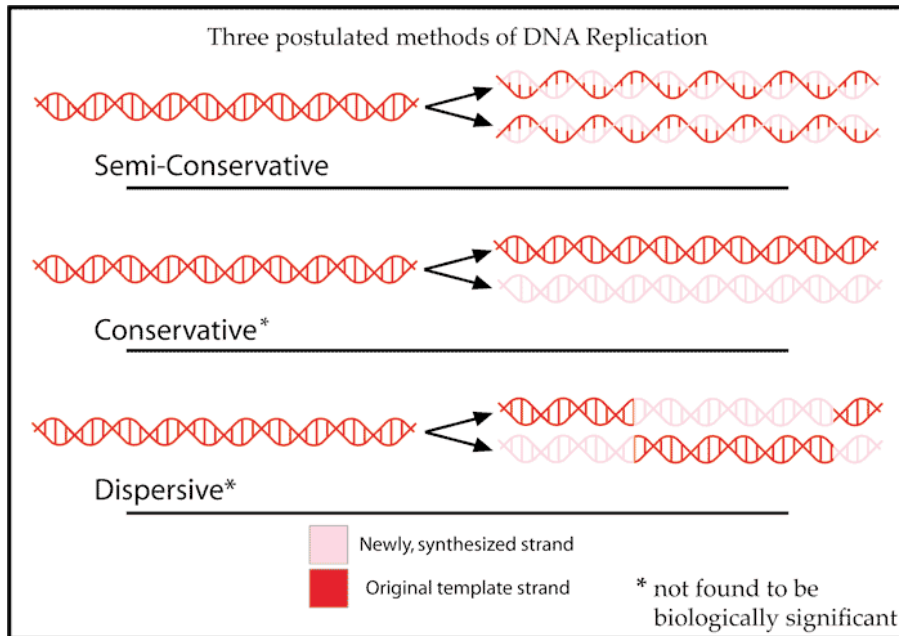
Ossidazione del benzopirene



La struttura a doppia elica del DNA espone all'esterno le cariche negative dei gruppi fosfato. Il DNA possiede la caratteristica di potersi duplicare, conservando la propria sequenza nucleotidica.

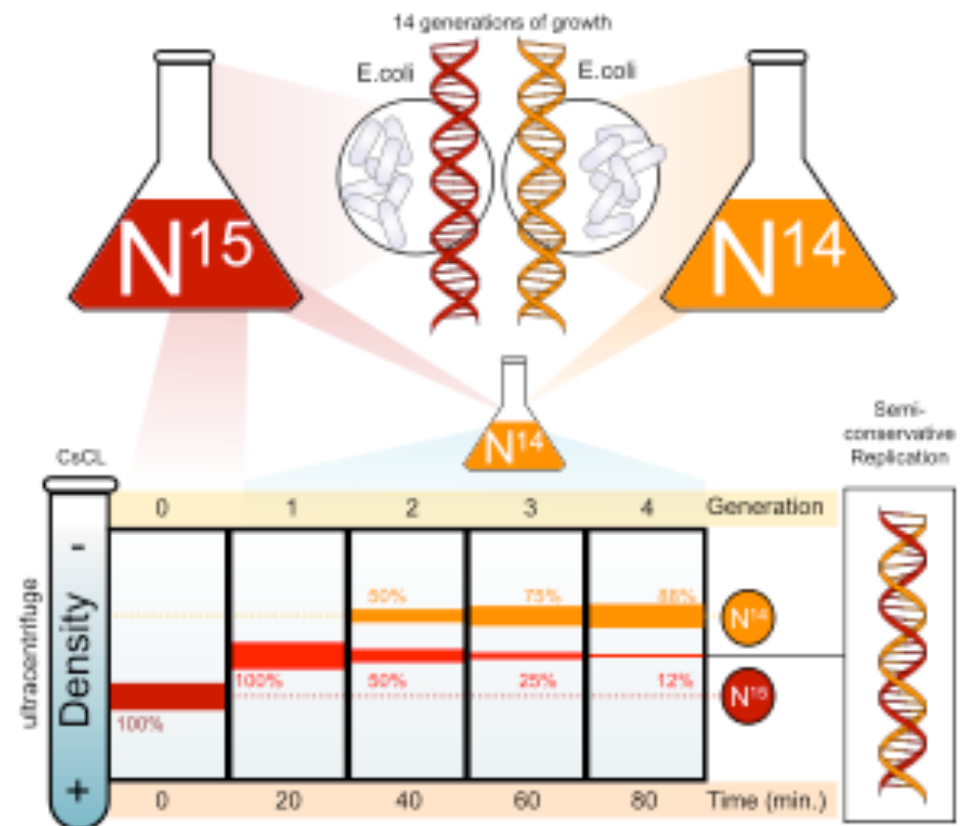


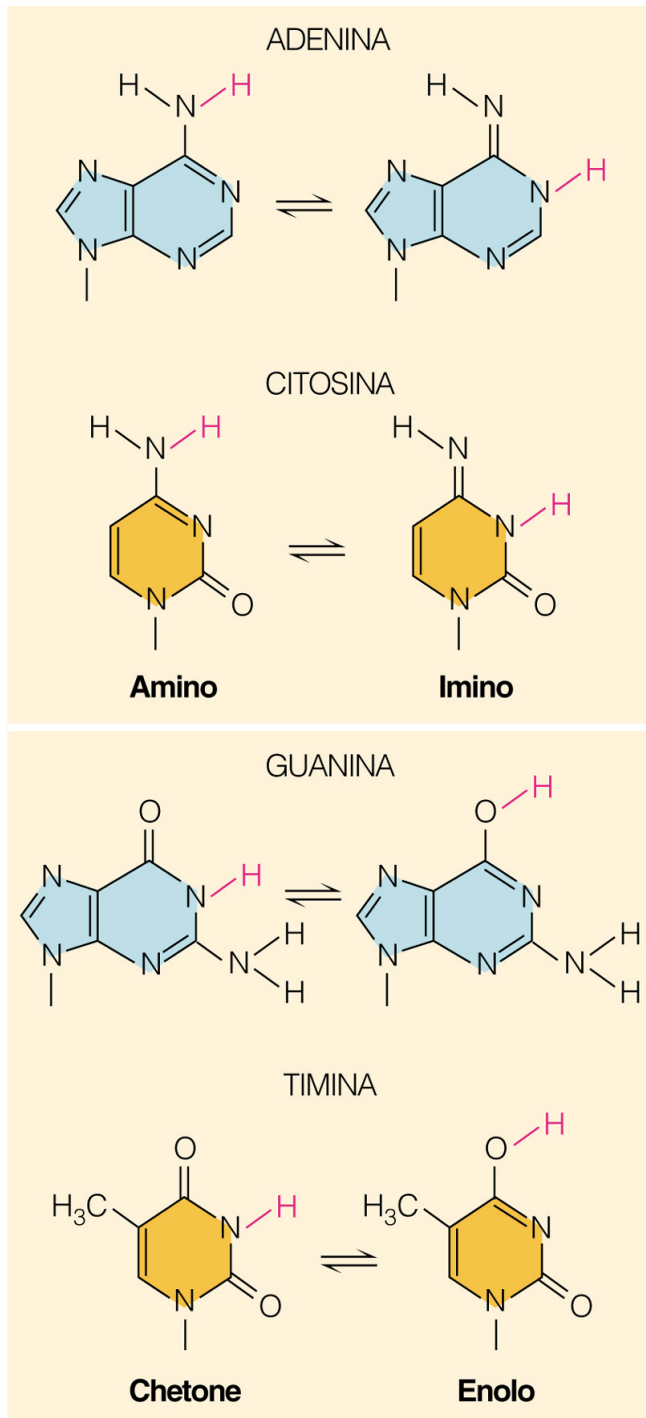




Replicazione semiconservativa: l'esperimento di Meselson e Stahl (1958).

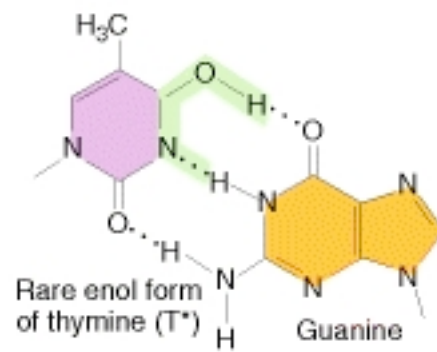
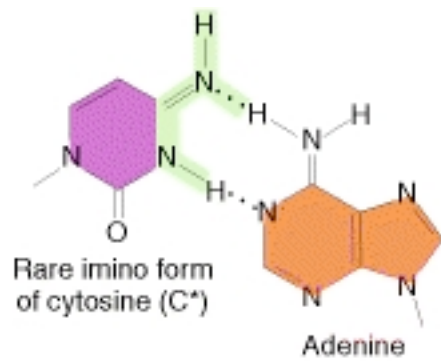
Ognuno dei due filamenti del DNA agisce come stampo per la replicazione. Ma la direzione e' 5'->3' per entrambi i filamenti.



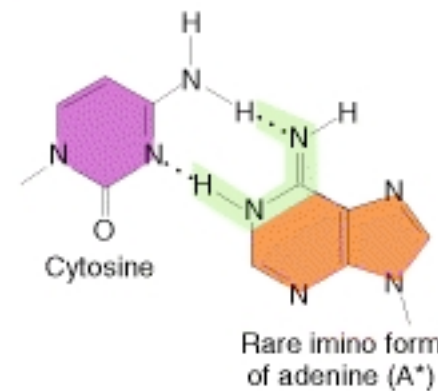


La tautomeria,
ovvero l'equilibrio,
tra le forme
chetonica ed enolica
aminica ed iminica.

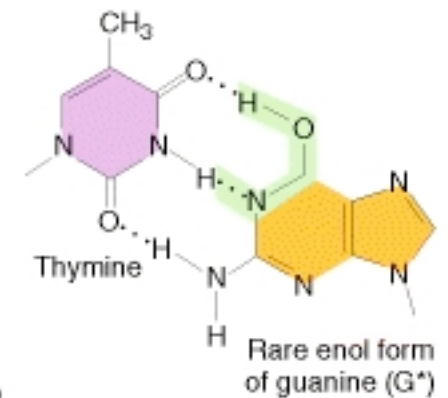
I tautomeri rari delle basi azotate possono portare ad appaiamenti non canonici ed indurre mutazioni.

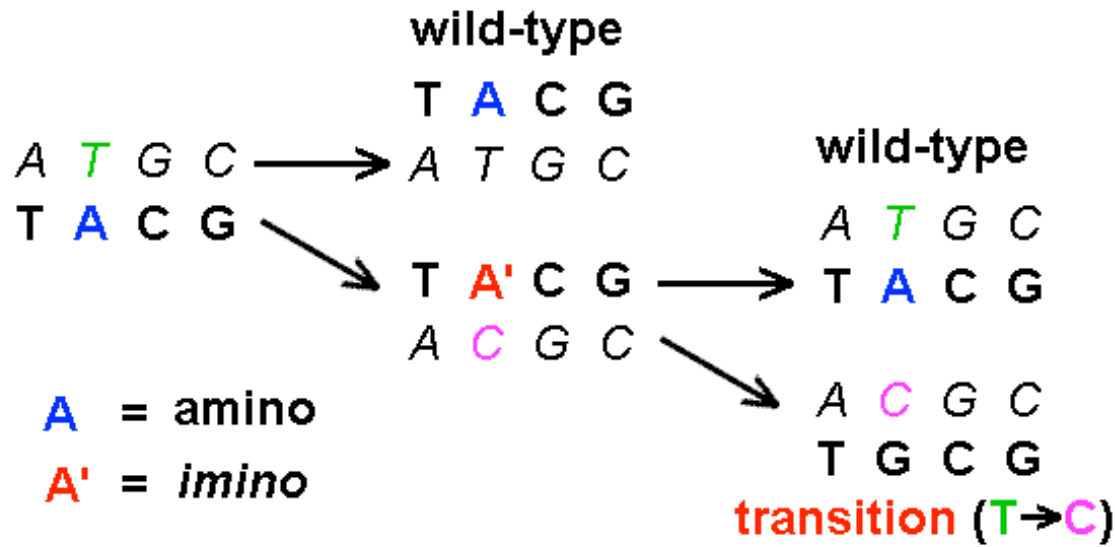


(a)

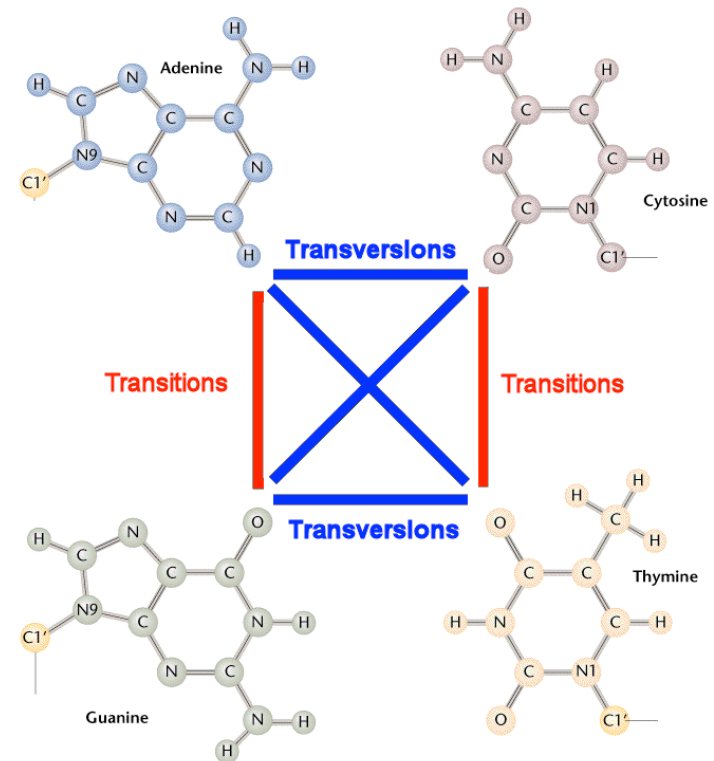


(b)

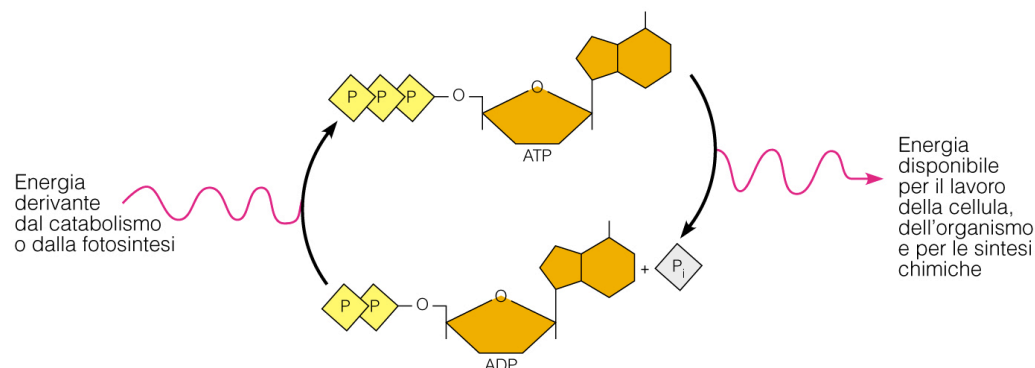
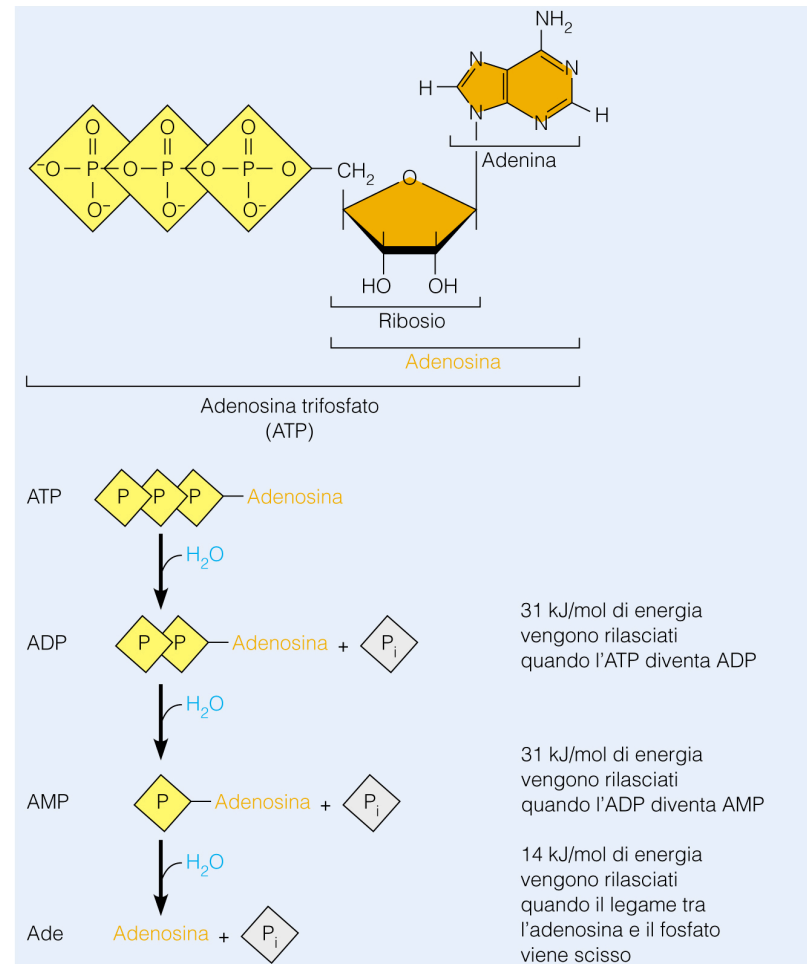




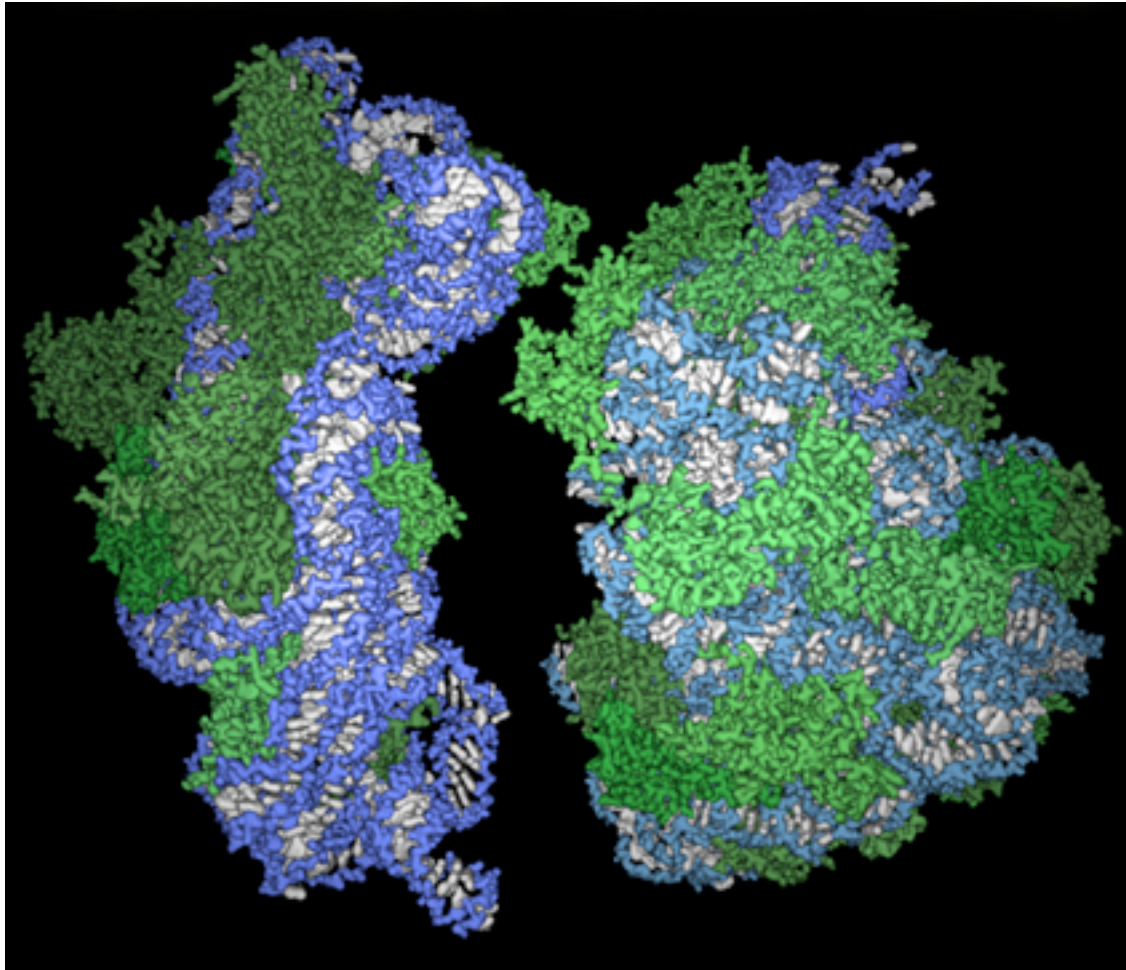
Le transizioni, causate da forme tautomeriche, sono più comuni delle transversioni.



Scambi energetici:
 l'adenosina
 trifosfato permette
 la produzione di un
 composto ricco di
 energia che
 connette le vie
 metaboliche.



All'interno del ribosoma la formazione del legame peptidico è catalizzata dall'RNA.

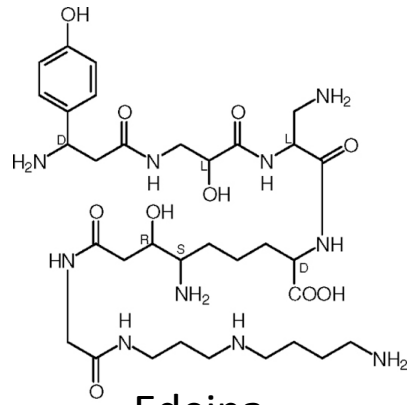


Classe di antibiotici: inibitori della sintesi proteica.

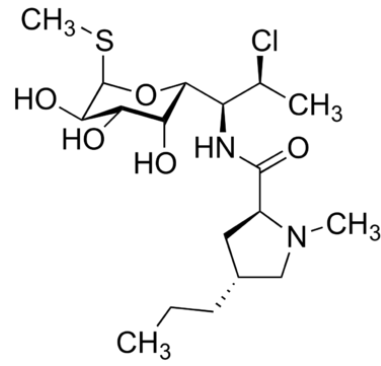
V·T·E		Antibatterici : inibitori della sintesi della proteina (J01A , J01B , J01F , J01G , QJ01XQ)		[hide]
30S	Aminoglicosidi (inibizione inibitori)	-Mycin (<i>Streptomyces</i>)	Streptomicina [#] · Diidrostreptomicina Neomicina [#] (Framicetina · Paromomicina · Ribostamycin) Kanamycin [#] (Amikacin · Arbekacin · Bekanamycin · Dibekacin · Tobramicina) Spectinomycin [#] · Igromicina B Paromomicina	
		-Micin (<i>Micromonospora</i>)	Gentamicina [#] (Netilmicina · Sisomicin · Isepamicin) Verdamycin Astromicin	
	Tetraciclina (tRNA vincolante)	Tetraciclina	Doxiciclina [#] · Clorotetraciclina · Clomocycline · Demeclocycline · Lymecycline · Meclocycline · Metacycline · Minociclina · Ossitetraciclina · Penimepicycline · Rolitetraciclina · Tetraciclina	
		Gliciciclina	La tigeciclina	
50S	Ossazolidinone (inibizione inibitori)		Linezolid · Torezolid · Eperezolid · Posizolid · Radezolid · Ranbezolid · Sutezolid	
	Transferasi peptidil	Amphenicols	Cloramfenicolo [#] · Azidamfenicol · Tiamfenicolo · Florfenicolo	
		Pleuromutiline	Retapamulina · Tiamulina · Valnemulina	
	MLS (transpeptidazione / traslocazione)	Macrolidi	Azitromicina [#] · Claritromicina · Dirithromycin · Eritromicina [#] · Flurithromycin · Josamicina · Midecamycin · Miocamycin · Oleandomicina · Rokitamycin · Roxithromycin · Spiramicina · Troleandomicina · Tilosina · Ketolidi (Telitromicina · Cethromycin · Solithromycin [†])	
		Lincosamidi	Clindamicina [#] · Lincomicina · Pirlimicina	
Streptogramine		Pristinamicina · Quinupristina / dalfofpristin · Virginiamicina		
EF-G	Steroidi antibatterici	Acido fusidico		

[#] OMS-EM · [†] Ritirato dal mercato · Studi clinici : ([†] Fase III · [§] Mai alla fase III)

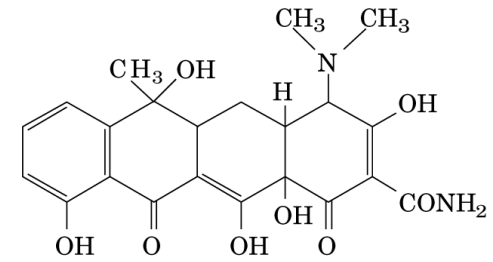
M : BAC	bact (clas)	gr + f / gr + a (t) / gr-p (c) / gr-o	droga (J1p , w , n , m , Vacc)
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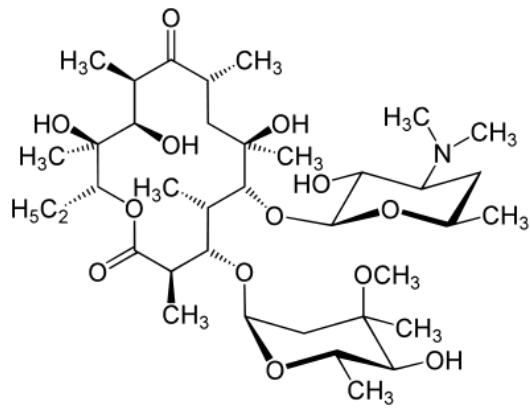
Edeina



Clindamicina

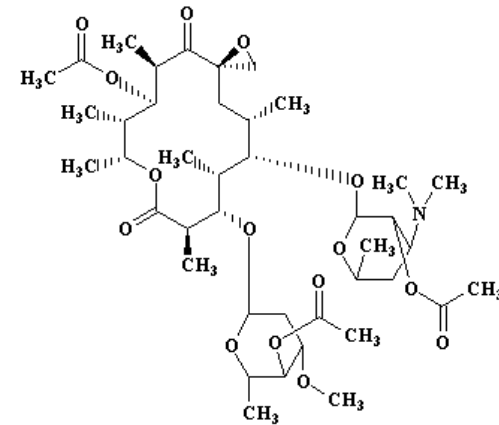


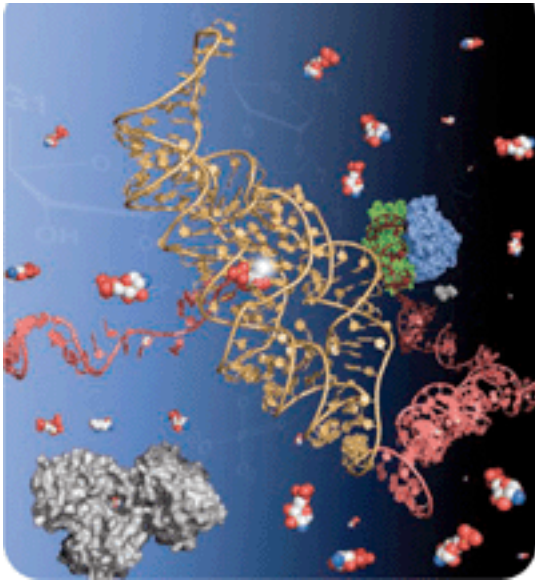
Tetracycline



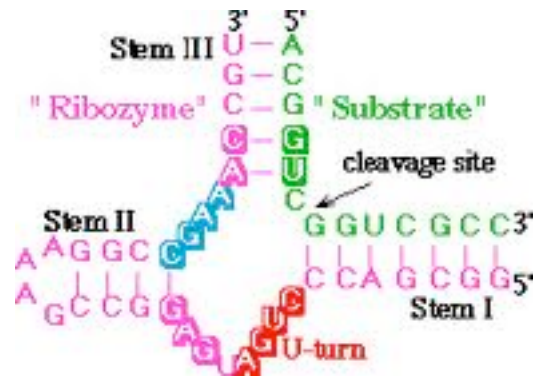
Eritromicina

Troleandomycin
C₄₄H₆₇NO₁₅





La possibilità di formare strutture terziarie complesse, la presenza del gruppo ossidrilico in 2' e la presenza di metalli conferiscono capacità enzimatiche all'RNA. **Ipotesi del mondo ad RNA:** le prime molecole biologiche potrebbero essere stati acidi ribonucleici, in quanto posseggono capacità autoreplicative e catalitiche.



Un ribozima.

